

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. Canceled.
2. Canceled.
3. Canceled.
4. Canceled.
5. Canceled.
6. Canceled.

7. (Currently Amended) An asymmetric annuloplasty device for supporting a [[heart]] mitral valve of a heart in a patient, the [[heart]] mitral valve having an annulus and a plurality of leaflets, and the device comprising:

a ring-shaped member configured for fixation to the annulus entirely inside the heart and extending around a central axis along which blood is adapted to flow in a downward direction when said ring-shaped member is fixed to the annulus, wherein said ring-shaped member is elongated along a first, major axis relative to a second, minor axis perpendicular to said first, major axis, said second, minor axis bisecting said ring shaped member along said first, major axis, and said ring-shaped member being asymmetrically shaped about said second, minor axis, and wherein a [[first]] posterior segment of said ring-shaped member is adapted to be attached to a posterior section of the annulus and is preformed to extend [[extends]] downward in the direction of blood flow through said ring-shaped

~~member relative to an anterior~~ [[a second]] segment of said ring-shaped member ~~in the direction of blood flow through said ring-shaped member so as to be retained in the preformed position~~ when the ring-shaped member is fixed to the annulus to promote coaptation between the plurality of leaflets.

8. (Currently Amended) An asymmetric annuloplasty device for supporting a ~~[[heart]]~~ mitral valve of a heart in a patient, the ~~[[heart]]~~ mitral valve having an annulus and a plurality of leaflets, and the device comprising:

a ring-shaped member configured for fixation to the annulus entirely inside the heart and extending around a central axis along which blood is adapted to flow in a downward direction when said ring-shaped member is fixed to the annulus, wherein said ring-shaped member is elongated along a first, major axis relative to a second, minor axis perpendicular to said first, major axis, said second, minor axis bisecting said ring shaped member along said first, major axis, wherein a ~~[[first]]~~ posterior segment of said ring-shaped member is adapted to be attached to a posterior section of the annulus and is preformed to extend ~~[[extends]]~~ downward in the direction of blood flow through said ring-shaped member relative to ~~[[a second]]~~ an anterior segment of said ring-shaped member ~~in the direction of blood flow through said ring-shaped member so as to be retained in the preformed position~~ when the ring-shaped member is fixed to the annulus and said ring-shaped member further defining a smaller area on one side of said second, minor axis than on an opposite side of said second, minor axis to promote coaptation between the plurality of leaflets.

9. Canceled.

10. Canceled.

11. (New) An annuloplasty device for surgical repair of a mitral valve, the mitral valve having a valve annulus, the valve annulus having an annulus anterior portion and an annulus posterior portion, the annulus anterior portion spanning between left and right anterior ends, the annulus posterior portion spaced apart from the annulus anterior portion in an anterior-posterior direction to define a mitral valve opening therebetween, the annulus posterior portion spanning in a generally arcuate shape between the left and right anterior ends, the mitral valve having an anterior valve leaflet attached to the annulus anterior portion and a posterior valve leaflet attached to the annulus posterior portion, the anterior and posterior leaflets having respective anterior and posterior free margins, the free margins meeting at opposed ends to define respective left and right commissures, the left and right commissures defining an inter-commissure dimension, the inter-commissure dimension defining an inter-commissure direction having a perpendicular relationship with the anterior-posterior direction, the left and right annulus anterior ends delimited, respectively, by projecting the left and right commissures anteriorly in the anterior-posterior direction towards the annulus anterior portion, the anterior and posterior leaflets movable between a closed systole configuration in which the free margins are in an approximated spatial relationship, and an open diastole

configuration in which the free margins are spaced apart to allow blood flow through the mitral valve generally along a valve-flow axis, the left and right commissures generally located within a valve-annulus plane, the valve-annulus plane being transverse to the valve-flow axis, said annuloplasty device comprising:

an anterior section, said anterior section being substantially elongate and spanning between first and second anterior ends, said anterior section adapted for attachment to the annulus anterior portion, said first and second ends of said device being adapted for placement respectively proximate to the left and right anterior ends of the annulus anterior portion, and

a posterior section, said posterior section adapted for attachment to the annulus posterior portion and spaced apart from said anterior section to define an annuloplasty device space therebetween, said posterior section spanning between said first and second anterior ends of said device with a generally curvilinear shape, said curvilinear shape being preformed to be non-planar when viewed in the anterior-posterior direction, wherein, in use, said non-planar generally curvilinear shape improves coaptation of the leaflet free margins in the systole configuration.

12. (New) The annuloplasty device of claim 11, wherein said device posterior section is configured to span in close proximity and alignment with the annulus posterior portion of the valve annulus.

13. (New) The annuloplasty device of claim 12, wherein said device posterior section is preformed to be asymmetric relative to an anterior-posterior plane, the anterior-posterior plane extending along the anterior-posterior direction, the anterior-posterior plane being perpendicular to the valve-annulus plane, and the anterior-posterior plane located intermediate the left and right commissures.

14. (New) The annuloplasty device of claim 12, wherein said device posterior section is configured and sized with a posterior segment that extends away from the valve-annulus plane, said posterior segment providing said non-planar shape.

15. (New) The annuloplasty device of claim 14, wherein said device posterior section extends generally within the valve-annulus plane, in use and said posterior segment is bent out of the valve-annulus plane in a manner that approximates said posterior segment to said device anterior section, and wherein in use the spaced apart dimension between the annulus posterior and anterior portions is reduced by the effect of said posterior segment acting on the annulus posterior portion.

16. (New) The annuloplasty device of claim 14, wherein said device posterior section is preformed to be asymmetricly shaped relative to an anterior-posterior plane, the anterior-posterior plane extending along the anterior-posterior direction, the anterior-posterior plane being perpendicular to the valve-annulus plane, and the anterior-posterior plane located intermediate the left and right commissures.

17. (New) The annuloplasty device of claim 16, wherein said posterior segment provides said asymmetric shape to said device posterior section.

18. (New) The annuloplasty device of claim 16, wherein said posterior segment is bent in the direction of normal blood flow along the valve-flow axis, and said posterior segment is located proximate to the right commissure on one side of the anterior-posterior plane.

19. (New) The annuloplasty device of claim 16, wherein said posterior segment is symmetric relative to the anterior-posterior plane.

20. (New) The annuloplasty device of claim 14, wherein said device posterior segment is preformed to be symmetric relative to an anterior-posterior plane, the anterior-posterior plane extending along the anterior-posterior direction, the anterior-posterior plane being perpendicular to the valve-annulus plane, the anterior-posterior plane located intermediate the left and right commissures.

21. (New) The annuloplasty device of claim 14, wherein said device posterior segment extends away from the valve-annulus plane in a direction generally aligned with the direction of normal blood flow along the valve-flow axis.

22. (New) The annuloplasty device of claim 21, wherein said posterior segment extends laterally towards said device anterior section, said laterally extending

posterior segment providing a selective narrowing of a first side of the device relative to a second side of the device, said first and second sides being defined on opposite sides of an anterior-posterior plane, the anterior-posterior plane extending along the anterior-posterior direction, the anterior-posterior plane being perpendicular to the valve-annulus plane, and the anterior-posterior plane located intermediate the left and right commissures.

23. (New) The annuloplasty device of claim 21, wherein said posterior segment extends towards said device anterior section, said posterior segment thereby providing a selective narrowing of said annuloplasty device space.

24. (New) The annuloplasty device of claim 14, wherein said posterior segment is arcuately shaped and spans between a first and second segment end, said first and second segment ends spaced apart along said posterior section and adapted to be located generally within the valve-annulus plane, said arcuately shaped posterior segment extending away from the valve-annulus plane

25. (New) The annuloplasty device of claim 24, wherein said arcuately shaped posterior segment is located generally within a segment plane, said segment plane being bent towards said anterior section.

26. (New) The annuloplasty device of claim 14, wherein said posterior and anterior sections together form a ring-shaped member.

27. (New) The annuloplasty device of claim 26, wherein said posterior segment is preformed by shaping a curvilinear length of said posterior section such that said curvilinear length is positioned out of the valve-annulus plane in use.

28. (New) The annuloplasty device of claim 26, wherein said ring shaped member is substantially "D" shaped when viewed along the valve-flow axis, said anterior section being configured to form the substantially straight portion of said "D"-shape, and said posterior section being configured to form the substantially arcuate portion of said "D"-shape.

29. (New) The annuloplasty device of claim 28, wherein said ring-shaped member is asymmetric about an anterior-posterior plane, the anterior-posterior plane being normal to the inter-commissure direction, the anterior-posterior plane being perpendicular to the valve-annulus plane and located intermediate the left and right commissures in use.

30. (New) The annuloplasty device of claim 14, wherein said annuloplasty device includes a selectively adjustable and lockable length, said selectively adjustable and lockable length allowing said annuloplasty device to be set in a preformed curvilinear shape to improve coaptation of the leaflet free margins in the systole configuration when in use.

31. (New) The annuloplasty device of claim 30, wherein said posterior segment is configured and shaped by said selectively adjustable and lockable length.

32. (New) The annuloplasty device of claim 31, wherein said selectively adjustable and lockable length includes a plurality of interconnected ball and socket members.

33. (New) The annuloplasty device of claim 11, further comprising a subvalvular post, said subvalvular post coupled to said annuloplasty device, said subvalvular post extending away, in use, from the valve-annulus plane in a direction generally aligned with the direction of normal blood flow along the valve-flow axis, said subvalvular post being adapted for attachment to a leaflet free margin.